

What is claimed is:

1. An apparatus comprising:  
a plurality of movable mirrors; and  
5 a covering lens disposed over the plurality of mirrors for adjusting an optical field of at least one of the plurality of mirrors.
2. The apparatus of claim 1, wherein the covering lens has a positive focal length.
- 10 3. The apparatus of claim 1, wherein the covering lens comprises:  
a first surface facing toward the plurality of mirrors; and  
a second surface facing away from the plurality of mirrors, wherein the first surface is substantially flat and the second surface is substantially convex.
- 15 4. The apparatus of claim 1, wherein the covering lens comprises:  
a first surface facing toward the plurality of mirrors; and  
a second surface facing away from the plurality of mirrors, wherein the first surface is substantially convex and the second surface is substantially flat.
- 20 5. The apparatus of claim 1, wherein the covering lens comprises:  
a first surface facing toward the plurality of mirrors; and  
a second surface facing away from the plurality of mirrors, wherein the first surface is substantially concave and the second surface is substantially convex with a smaller radius than the concave surface.
- 25 6. The apparatus of claim 1, wherein the plurality of mirrors are micro-machined mirrors.
- 30 7. An optical switching system comprising:

a first mirror apparatus having a plurality of movable mirrors; and  
a second mirror apparatus having a plurality of movable mirrors, wherein  
the first mirror apparatus is operably coupled to reflect an optical signal toward  
a selected mirror of the second mirror apparatus, and wherein at least one of the  
5 first mirror apparatus and the second mirror apparatus includes a covering lens  
for adjusting an optical field of at least one of its plurality of mirrors.

8. The optical switching system of claim 7, wherein the covering lens has a  
positive focal length.

9. The optical switching system of claim 7, wherein the covering lens  
comprises:

a first surface facing toward the plurality of mirrors; and  
a second surface facing away from the plurality of mirrors, wherein the  
15 first surface is substantially flat and the second surface is substantially convex.

10. The optical switching system of claim 7, wherein the covering lens  
comprises:

a first surface facing toward the plurality of mirrors; and  
20 a second surface facing away from the plurality of mirrors, wherein the  
first surface is substantially convex and the second surface is substantially flat.

11. The optical switching system of claim 7, wherein the covering lens  
comprises:

25 a first surface facing toward the plurality of mirrors; and  
a second surface facing away from the plurality of mirrors, wherein the  
first surface is substantially concave and the second surface is substantially  
convex with a smaller radius than the concave surface.

30 12. The optical switching system of claim 7, further comprising:

Prior art

a plurality of input lenses operably coupled to direct a plurality of optical signals from a plurality of input fibers to the first mirror apparatus.

Prior art

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13. The optical switching system of claim 7, further comprising:  
a plurality of output lenses operably coupled to receive a plurality of optical signals from the second mirror apparatus and direct the plurality of optical signals to a plurality of output fibers.

Prior art

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14. The optical switching system of claim 7, further comprising:  
control logic operably coupled to determine a desired position for each movable mirror and to send control signals to the first mirror apparatus and the second mirror apparatus for setting each movable mirror to its desired position.

Prior art

Prior art

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15. The optical switching system of claim 7, wherein the movable mirrors are micro-machined mirrors.

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16. An optical switching apparatus comprising:  
a plurality of micro-machined mirrors; and  
means for adjusting an optical field of at least one of the plurality of micro-machined mirrors.